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THE INFLUENCE OF PREDATOR CONTROL ON TWO ADJACENT WINTERING DEER HERDS[1]

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ABSTRACT.— Two mule deer herds were studied on comparable, adjacent winter ranges in Utah. Significant differences in overwinter fawn survival were attributed to intensive predator control.

An unknown number of deer are continually killed on summer and winter ranges by predators, and in at least some locations these losses are significant. In Oregon, Trainer (1975), using radio-collared mule deer, found 14 percent fawn loss to predation in the first 45 days following birth, and 40 percent loss between January and April. Knowlton (1968) found that predation on fawns significantly limited deer population growth on the Welder Wildlife Refuge. Beasom (1974) showed a three-fold increase in the number of surviving fawns in a location of intensive predator control when compared to adjacent ranges in Texas. Smith (1976) compared fawn survival through January by comparing a herd enclosed by a predator-proof fence to an adjacent free-ranging herd; the enclosed herd had about twice the number of fawns/100 does. Conversely, other investigators (Ozoga 1966, Hancock 1974, Gipson 1974, Korschgen 1957) have indicated that predators have little influence on deer herds.

From 1973 to 1976 mule deer were studied on two adjacent pinyon-juniper winter ranges in northeastern Utah. Returns and observations from a deer tagging program indicated that both herds shared the Blue Mountain Plateau summer range. During late autumn one herd migrated into Miners Draw on the south side of the plateau, and the second herd migrated into the Cub Creek drainage on the west slope. Wintering herds were discrete, separated by about 11 km. Winter ranges were comparable in elevation, climate, and major browse species—big sagebrush (*Artemisia tridentata*), mountain mahogany (*Cercocarpus montanus*), and Utah juniper (*Juniperus osteosperma*). Browse utilization transects and field observations indicated that throughout the study deer numbers were well below carrying capacity on both ranges.

Predator control in the two areas greatly differed. Miners Draw, which received only limited control, was accessible by an unimproved road, and during the winter deep snow conditions often prevented any travel except via snowmobile. Consequently, this area received little use, and no predator hunters were observed in the area.

In comparison, the Cub Creek drainage was accessible via a paved two-lane road, becoming unimproved about halfway through the winter range. Both sections of this road were kept open by snowplows for two-wheel drive vehicles during most of the winter. A ranch was located in the lower portion of the area. Sheep, cattle, and horses were allowed to graze on the drainage throughout the winter. To minimize livestock losses, predators were intensively controlled by the owners and by a hired professional hunter-trapper. In addition, other predator hunters were occasionally contacted. The USFWS took approximately 80 coyotes in the Cub Creek drainage and 45 in Miners Draw during the winters from 1973 to 1976, and reported predator control work was less extensive in Miners Draw (personal communication, Bob Dickson, USFWS).

The number of visual predator observations, deer carcasses located, and deer den-

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sities between areas also differed. With approximately the same amount of effort expended in observation in both areas, only one coyote was observed in the Cub Creek drainage compared to nine in Miners Draw. Fifteen deer carcasses were found in Miners Draw; three of them were directly attributed to predation. Most of the others showed evidences of predation, but carcass conditions were too poor for accurate verification. In the Cub Creek drainage only two carcasses were found; one was evidently a road kill, the other was likely a poaching case. The mean deer densities for the two winters were six deer/km^2 in Miners Draw and 19 deer/km^2 in the Cub Creek drainage. The winter range in Miners Draw contained about 39.7 km^2; the Cub Creek drainage contained 29.8 km^2.

Deer classification counts were made during post-hunt and post-winter periods with 20x spotting scopes and binoculars. Data used included only those observations where all individuals within the group were positively classified (Table 1). Using an adjusted chi-square test, fawn and adult classification counts were not statistically significant between areas for the post-hunt periods 1973–74. However, counts were significantly different for the post-winter periods (1974 $X^2_{1.1.9} > .80$; 1975 $X^2_{1.1.9} > .80$; 1976 $X^2_{1.7.5} > .99$) as well as for all years combined ($X^2_{3.11.3} > .98$). Thus a significantly higher proportion of the fawns entering the winter period survived in the Cub Creek drainage, which had more intensive predator control, than did in Miners Draw.

TABLE 1. Fawn : adult ratios during post-hunt and post-winter periods (Fawns : 100 Adults)

	1973–74		1974–75		1975–76	
	Cub Creek	Miners Draw	Cub Creek	Miners Draw	Cub Creek	Miners Draw
Post-hunt	46	41	74	65	—	—
Post-winter	49	29	50	31	79	27

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